THE SCIENCE NEWS-LETTER

A Weekly Summary of Current Science

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ISSUED BY
SCIENCE SERVICE
B and 21st Streets
WASHINGTON, D. C.

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SUBSCRIPTION: $5 A YEAR, POSTPAID

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Vol. VI. No. 196 Saturday, January 10, 1925

PRESIDENTIAL ADDRESS AT AMERICAN ASSOCIATION CALLS FOR CONSERVATION

The reckless and wasteful exploitation of our seemingly inexhaustible natural resources has brought the United States to a point where only the prompt application of scientific methods of conservation and utilization can prevent a serious check to national development.

This was the message of the retiring president of the American Association for the Advancement of Science, Dr. Charles D. Walcott, secretary of the Smithsonian Institution, delivered at the opening of the session in Washington.

"The cream has been skimmed and all too often the milk has been thrown away," he said, and explained this point in the following language.

"The whole philosophy of exploitation has been basedon the theory of making maximum profits for the exploiter, rather than the ideal of greatest service of lasting benefit to the people of the world as a whole. The resources seemed unlimited, and it was assumed that future requirements would adjust themselves automatically and that posterity would take care of itself.

"Now the point has been reached where it is evident that the resources have a limit. Expansion cannot continue indefinitely, nor can even the present scale of consumption be maintained as population increases, unless steps are taken to replenish the supply. The pressure of scarcity and increasing costs of exploitation demand the elimination of wastes, the intensive utilization of the resources that are left, and the discovery or creation of new supplies.

"The discovery of new principles or new methods may make it economically practicable to intensify farming. Better understanding of silvicultural principles and closer study of the life history of our forests will show us how to utilize that resource without jeopardizing its continued productivity, and without increasing the economic burden on the users.

"Our mineral resources, as a general proposition, cannot be renewed through human effort, at least in the present state of knowledge. But even with them, the available supplies can be extended almost indefinitely through the discovery of new methods of extraction, or through the discovery and utilization of substitute materials.

"In comparison with the magnitude of the task, the amount of research that is being done is exceedingly small."

MARS MAY SUPPORT LIFE, NEW OBSERVATIONS SHOW

The climate on Mars is such that it may support life, mosses and lichens or trogdolytic animsla able to withstand a freezing night and a thawing midday on that ruddy planet. These are the conclusions presented to the American Physical Society by Dr. W. W. Coblentz of the U. S. Bureau of Standards, who with Dr. C. O. Lampland of the Lowell Observatory, Flagstaff, Ariz., has measured radiation from this planet and determined its temperatures accurately.

The north pole during the Martian winter has a temperature of 94 degrees below zero, Fahrenheit, and in summer the south pole is 76 degrees below zero. An estimated value for the night side of the planet is 112 degrees below zero Fahrenheit. In the equatorial regions of the planet, higher temperatures corresponding to those on earth are attained during the day, reaching 41 degrees Fahrenheit in the bright regions and 59 degrees Fahrenheit in the dark regions. The integrated temperature of the whole disk is 22 degrees below zero.

"What about life on Mars?" Dr. Coblentz said. "That depends upon our point of view; whether we think of palm trees growing in our tropics, or mosses and lichens which grow on the apparently bare piles of volcanic cinders of Arizona and under our arctic snows.

"The foregoing measurements show that for a few hours at noonday on the equato of Mars the surface temperature is not unlike that of Washington on some bright day in March. But consider the exceedingly cold nights and the great daily variation in temperature, amounting to perhaps 180 degrees Fahrenheit. Water is not present on Mars in sufficient quantity to form permanent lakes.

"Hence, with noonday temperatures of only 40 to 60 degrees Fahrenheit, even on the hottest spots on the equator, and with temperatures so low that probably all the water vapor freezes out of the atmosphere at night, it is evident that while vegetable and perhaps animal life appears to be possible on Mars it must be adapted to withstand prolonged drought and intense cold. Moreover, with such rapid temperature changes the reactions must be rapid. With most of the surface at arctic temperatures it is reasonable to assume that if vegetable life similar to ours can exist on Mars it must be like the mosses and lichens which thrive under our arctic snows. Similarly, animal life must be trogdolytic, able to burrow deep and hiberna or able to withstand the intense cold in a benumbed state, as do, for example, the torpid grasshoppers, wasps, and ants one find on warm days in winter.

"Apparently life on the equatorial regions of Mars is a process of thawing out and limbering up in the forenoon and a reversal of the process in the afternoon. On the other hand, in the polar regions where the Martian day is a matter of eight to twelve terrestrial months, judging from our measurements which are not yet completed, the temperature rise is not as high as on the equator. But, during the lon arctic day, temperatures will not be so extreme and living matter will not be subjected to such short periodic changes in activity as occur on the equator. From this it would appear that in the polar regions of Mars the cycle of development, reproduction and death of the living cell is not subjected to the hazards that appear to occur on the equator.

"For the first time in history physical measurements have been made which give an indication that the temperature of the surface of Mars rises above the freezing point of water. Prior to our measurementsof 1922, and especially those of 1924, the general opinion prevailed that the temperature of Mars is far below freezing. On the basis of these new measurements speculation is already rife as to life on this planet."

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EGG SUPPLY TREATENED BY INVISIBLE RAIDER

The wheels of government have turned rapidly here to protect America's fresh egg industry from the menace of an unseen foe. With numbers of chickens in New York tucking their heads under their wings and dying of the devastating European plague, Congress has voted $100,000 to provide inspection of poultry similar to that already given to other livestock. Department of Agriculture officials, alarmed at the threatening spread of the disease to other sections of the country, are taking steps to enforce the provisions of the bill as soon as it becomes law.

The European plague has practically wiped out poultry raising in certain sections of Austria, Hungary, and other old world countries. It attacks all kinds of poultry, but water fowl are less subject to it than chickens.

The combs and wattles of birds seized with this disease turn dark red to purple, the eyes close, the birds droop, stick their heads under their wings, and die in from five hours to three or four days. The symptoms are so similar to chicken cholera that it is often only upon expert examination of the blood that the two diseases can be distinguished. The case of chicken cholera is produced by a definit easily detected germ. The microscope, however, does not show the organism which causes the European pest or plague. It is what is known as a "filterable virus", the causative agent being so small that it can pass through a fine porcelain filter which strains out ordinary germs. When the filtrate is administered to chickens, however, it produces the characteristic symptoms of the disease.

Cases have been reported from New York City and the country immediately surrounding it. It has also been reported on one farm up-state in New York. Chickens only have been affected so far in this country and the younger chickens are probably the most susceptible although the disease is known to attack fowls regardless of age or sex.

SAYS INFECTION MAY LURK IN "HARMLESS" ORGANISMS

Micro-organisms, usually considered harmless, may under appropriate conditions attack the body of an animal, with which they have been associated, to the point of producing dangerous illness, Dr. Richard P. Strong, Harvard University, pointed out in his vice-presidential address before the medical sciences section of the American Association for the Advancement of Science.

"Micro-organisms living on dead tissue, are found in the noraml mouth or tonsils of many individuals, as well as in association with other parts of the body, he said. "Under certain circumstances in which the resistance of the individual is lowered, and the tissues bruised or burned, these organisms may change their character, and gradually develop pathogenic properties, producing extensive ulcerative and frequently gangrenous lesions," Dr. Strong stated.

"Such ulcerations may occur about the mouth and throat and in the lungs, and in the tropics large chronic ulcerations may be produced on the legs."

Dr. Strong cited examples of minute plant and animal forms commonly regarded as innocuous, and living on dead material, which have been known to change in character so that they simulate the organisms responsible for well-defined diseases, producing the symptoms of the malady in question and feeding on the body of the host animal. The evidence which he presented requires a change in viewpoint of conservative bacteriologists, many of whom consider the characteristics of a germ as definit

and have not previously admitted that they may be altered to this extent. It has been allowed that some such changes might take place during the course of many generations of individuals, but Dr. Strong's work forces the conclusion that it is quite possible to produce profound modification on short order.

Discussing corkscrew one-celled forms known as spirochetes, which figure in prevalent disease, "the free living spirochetes in water have generally been considered harmless," he stated. "Recently there have been found in certain stagnant waters, and on the surface of filter beds, a number of spirochetes which correspond in form with their parasitic cousins, such as the causal organisms of syphilis, relapsing fever, seven-day fever and bleeding jaundice."

Experiments on the bacterium resembling the jaundice organism, isolated from water, proved that after being grown in nutritive solutions, this particular variety did actually acquire the power of causing the jaundice or Weil's disease, so that many of the animalsinoculated with the preparation died.

A similar experiment with a protozoan, a low animal form, resulted in the development of a species which sickened monkeys, although the animals were immune to the untreated germs.

In the case of some of the experiments, the change was so complete that parents, once free living but educated to the parasitic state of life, produced descendants which were also parasitic. In this case, free living forms were developed in addition, so that the growth of the germs was sure to take place, even though an obliging host animal should not be conveniently at hand. This observation is a second blow for the old ideas, as it was previously thought that a characteristic acquired within such a short space of time could not be hereditary.

The discovery may explain mysterious diseases of the digestive tract, according to Dr. Strong. Spirochetal organisms are known to exist in the intestinal canal, but their exact relationship to intestinal disease is indefinite. "They may under the proper circumstances give rise to dysenteric symptoms, or to chronic gangrenous appendicitis," he suggested.

INSECT SOUNDS HAVE NO MEANING

The plaintive love-song of the cricket, the cheerful fiddling of the Katydid, and all the other insect sounds that make summer nights in the country so romantic - and often so unbearable - may have no meaning at all to the insects themselves. Dr. Frank E. Lutz, curator of insects in the American Museum of Natural History, New York, speaking before a joint meeting of the Entomological Society of America and the Ecological Society of America, challenged the idea that every sound that an insect made had its meaning.

"Judged by human ears, the best insect-musicians of today belong to rather primitive orders," said Dr. Lutz. "The more advanced groups, such as ants, bees, flies, and butterflies, make no sounds that we can hear or else, at most, what seem to us to be nothing more than faint squeaks, buzzes, hums, or clicks. However, it is entirely probable - indeed, practically certain - that insect-sounds are not made for the purpose of being heard by human ears. Whether the insects themselves hear these sounds is the important question and one that has not been - possibly can not be - determined beyond all doubt.

"In this connection it should be remembered that, in man's affairs at least,

many sounds are made without intention and even contrary to desire - for examples, sneezing and snoring. No part of the success of a certain popular kind of automobile is due to the various and often loud noises emitted by the machine in action. Using an illustration more applicable to the present subject, the armor of the knights of old creaked and rattled as they moved. Their fellows were able to hear these sounds and reacted to them. A rough spot in a particular joint increased the sound made by the moving of that joint. Now, if the armor-maker purposely designed these joints to creak or if the wearer purposely creaked his armor, even if for no other motive than to tickle his pride (as has been the case with wearers of squeaking shoes), then the creaking of the joint had a significance analogous to that usually claimed for certain sounds made by insects - there was an adaptation of structure to sound production. But, considering now the sounds made by insects, if they are merely incidental to friction between parts of their body, analogous to unintentional squeaks and rattles of knightly armor then those sounds have no biological significance, except as they may betray the insect to its enemies."

SCIENCE HUNTING DOWN ANTIRACHITIC VITAMIN

Further clews in the tracing down of the mysterious accessory food factor or vitamin which prevents rickets were revealed for the consideration of the American Society of Biological Chemists, meeting in Washington, by Drs. Alfred F. Hess and Mildred Weinstock, of New York, who are on the trail of the component of cod liver oil now well known as an effective substitute for the ultra-violet rays of sunshine in the banishing of bow legs, bad teeth and bending bones.

Cod liver oil supplies curative and preventive principle, which is absent in vegetable oils, such as olive or cottonseed oils. But these oils, as well as green vegetables, such as lettuce, or wheat can be likewise endowed with power of preventing rickets by exposing them to the rays of ultra-violet light from a mercury vapor or carbon arc light. The power so acquired is not immediately lost, but is retained by the lettuce for several days.

Further, according to the statement of the New York doctors, the property imparted to otherwise inactive oils by the exposure to ultra-violet rays is of permanent nature, and is retained for many months. "While it is impossible to state definitely that the substance which is formed is the same as that which is responsible for the remarkable curative value of cod liver oil, it has been found by means of chemical examinations that cod liver oil can be separated into two definite portions - one which is of value andone of no value in curing rickets," they stated.

"The vegetable oils which have been exposed to the ultra-violet rays can likewise and by the same chemical means be separated into a portion which is of no value, and another which acts as a specific in warding off or curing rickets. It would, therefore, seem that a substance has been formed in the vegetable oils by the action of the ultra-violet rays, similar to that which is naturally present in the oil of the liver of the cod."

Minnesota has nine fish refuges either closed to fishing at all times or during specified seasons.

EXTRACTS STRENGTHEN IMPOVERISHED BLOOD

A new treatment for impoverished blood was submitted by Dr. Chauncey D. Leake, of the University of Wisconsin, for the criticism of scientists at a meeting of the American Association for the Advancement of Science. Dr. Leake finds that preparations of spleen and red bone marrow will stimulate the production of blood in rabbits, dogs and normal human beings, frequently to such an extent that an increase is noticed within one day in the actual count of the red corpuscles in the blood stream, and also in the amount of hemoglobin or coloring matter which they contain.

"This fact has been applied sucessfully to the treatment ofanemia," Dr. Leake said. The extracts will make good the deficiency in red blood cells which is characteristic of anemic patients, it appears.

"The increased production of red cells is greater when the two substances a taken in combination than when they are taken alone," stated Dr. Leake. "The blood returnsto its former condition, when the treatment is stopped. Experiments indicate that the effect is due both to stimulation of blood production, and to the fact that the combined spleen and marrow extracts increase the resistance of the red blood cells to destructive agencies in the body."

Success of the treatment is not dependent upon injections, as similar beneficial results are obtained when the preparations are taken through the mouth.

Dr. Leake warns that his discovery holds out no hope for the victims of pernicious anemia, however. "No successful treatment for this disease has been found," he admitted. "It is still fatal. The spleen and marrow extracts are a successful remedy for 'secondary' anemias, however. The blood of patients which has become weakened as a result of an attack of an infectious disease or other pathogenic condition, can be bolstered up by the use of the preparation until such time as the bod is able to take care of itself.

NEW DANISH TUBERCULOSIS TREATMENT TO BE TESTED BY GOVERNMENT

A thorough test of the new treatment for tuberculosis devised by Professor Møllgaard of Copenhagen will be made under the auspices of the U. S. Public Health Service before it will be available for distribution in the United States.

The new method of treating tuberculosis was put forth by Professor Møllgaard of the Royal Veterinary College of Copenhagen who has called the preparation used "Sanocrysin". The material used consits of a preparation of gold in combination with thiosulphuric acid known as auri-thiosulphate. Probably the sodium salt of this compound is what is used. On introduction into an individual this substance produces a rather severe reaction evidenced by nephiritis, fever, skin rashes, and shock. This is interpreted by the Danish scientist as evidence of the solution of tubercle bacilli in the sick individual as the same reaction with the same dose does not occur in normal individuals. To offset the severity of this reaction and in a measure to control it, Professor Møllgaard makes use of an anti-tuberculosis serum, which is prepared by the Danish State Serum Institute, by injecting dead tubercle bacilli in either calves or horses.

After proving to his satisfaction that the cure was valuable in animals, Professor Møllgaard arranged with Dr. Secher of the Municipal Hospital in Copenhagen to test the cure out on human cases of tuberculosis. The report of this

clinical investigation of its value was recently made in Copenhagen and the reports were favorable as to its value in certain types of pulmonary tuberculosis but doubtful as to its value in surgical tuberculosis and severe cases of pulmonary tuberculosis. Arrangements were then made for the testing of the material in England but reports of these experiments have not yet been made public.

An American pharmaceutical company has becomeinterested in the distribution of this material in America but in as much as part of the cure is a serum it i necessary, as provided by law in the interest of safeguarding the public health, that this new cure have the approval of the United States Public Health Service before it can be sold in the United States. The Public Health Service, through its Hygienic Laboratory, has arranged with the best equipped scientific men in this fie to carry out a series of animal experiments and has arranged for the study of the cure in clinical cases in American under the direction of a Danish physician who has used it in Denmark. These studies are being pushed with the greatest rapidity but not until the cure has been shown to be successful will it be available for distribution.

The Danish treatment recalls efforts of the great German bacteriologist, Koch, discoverer of the tuberculosis bacillus, who tried the double chloride of gold and sodium in the treatment of this disease. Thirty or more years ago two Detroit physicians, Drs. Gibbes and Shurley, also advocated the use of a double chloride of gold and sodium in tuberculosis cases and many successful treatments were reported. American physicians are intensely interested in the close resemblance between the Copenhagen product and that used years ago in this country.

LONG ISLAND DOCTOR HAS CURE FOR CRAMP

Breathe in a bag if you wake in the night with cramps in your limbs. This is the advice of Dr. G. W. Fitz of Long Island, who has confirmed a theory for the cause of primary cramp and in so doing has developed a cure. The exact degree of acidity in the blood is regulated to a fine degree in healthy people by a sensitive mechanism, and a slight shifting to the alkaline side of the normal is held responsible for the involuntaty stimulations of the muscles which manifest themselves as muscle cramp. Accepting this theory, Dr. Fitz argued that if he were to counteract this alkalinity, the distressing symptoms should disappear and this he proceeded to do by permitting the accumulation of carbonic acid in the blood stream. When seized with an attack, he tried the effect of reduced breathing, holding the breath, and finally of breathing into a bag. The result was that if sufficient carbon dioxide was re-inhaled, the cramps disappeared.

"When re-breathing was made fully effective by the use of a three-quart rubber cloth bag securely held over mouth and nose, the pain was immediately greatly reduced, and the cramps faded out," stated Dr. Fitz. When the treatment proved successful in his own case. Dr. Fitz advised it for many of his patients, andit proved equally effective.

"The results have been so uniform and prompt in many different people and i cases involving different muscles, that there can be no question that reduction in the alkalinity of the blood by permitting the accumulation of carbon dioxide, constitutes a true physiological cure for cramp of the skeletal muscles," he stated. "It constitutes a quick practical cure for an extremely painful, and frequently, a terrifying condition."

Obviously the treatment cannot be applied to attacks of cramp which are a secondary consequence of some other disease.

SPONGES, TORN TO BITS, REASSEMBLE THEMSELVES

A sort of scientific Humpty-Dumpty, able to reassemble itself after being shattered to bits, and needing neither the king's horses nor the king's men to help in the process, was described by Paul S. Galtsoff, naturalist on the U. S. Bureau of Fisheries steamer, "Albatross", before the American Society of Zoologists.

Mr. Galtsoff squeezed small living sponges through fine gauze filters, thus breaking their jelly-like flesh down to the separate cells of which it is composed. Falling into a dish of water, the cells began to creep along the bottom. Where they came into contact with other cells they coalesced with them forming little clumps.

At first these little clumps were simply haphazard assemblages of all the different kinds of cells that go to make up a sponge, but as time went on a sorting process took place, and skeleton cells, flesh cells, and each of the other types slowly migrated into its appropriate place, until at the end of about two weeks each little clump had become a small, perfectly organized, independent sponge animal.

The experimenter stated that for a successful development at least two thousand cells are necessary; groups composed of a smaller number of cells fail to develop and finally die. Apparently the cells know their kindred. If cells of two different species of sponges are mixed together they move independently, and each kind coalesces only with other cells of its own species.

USE IRON TO ENSNARE AIR NITROGEN

Difficulties in the path of those who would capture the nitrogen gas of the atmosphere, famous for its aversion for other chemicals, were brought to the attention of the American Chemical Society by Dr. J. A. Almquist, of the Fixed Nitrogen Laboratory. Among the most promising of the methods so far introduced for accomplishing this result, which would cheapen fertilizer, is the making of synthetic ammonia. This pungent gas, formed by the union of three atoms of hydrogen with one of nitrogen, would then serve as the starting point for the manufacture of other nitrogen-containing substances.

Nitrogen and hydrogen can be caused to unite by the agency of catalysts, which are substances capable of producing reactions between chemicals unwilling to unite, although the catalysts themselves do not actually form a part of the new substance. This is the method to which Dr. Almquist has devoted his attention.

"We have made an extensive investigation of catalysts for this reaction," he said. "Observations with materials of the iron type have shed light on the nature of the processinvolved." Just why the presence of one substance will set off a reaction between others when none of it is used up in the operation, is a point which still puzzleschemists, and one which is the subject of much investigation.

Dr. Almquist and his associates have found, in the case of the iron catalyst in ammonia synthesis, that the pressure under which the nitrogen and hydrogen gases are kept influences the efficiency of the catalyst; they find that the absorption of the product, ammonia, slows up the operation. It was previously though that the

iron had to take up some of the ammonia before it would work, but the experiments now show that this view is wrong.

Another difficulty in the way of large scale application of the technic is the fact that nitride of iron may be formed on catalysts which cuts down the surface at which the union between the two gases takes place.

MACHINE TESTS MIND AND RECORDS RESULT

A machine which automatically tests human intelligence and records the result entirely mechanically, was demonstrated before the American Psychological Association meeting by Dr. S. L. Pressey of Ohio State University. By simply pressing a key, the person tested revealed his mentality or lack of it.

Questions of the sort commonly used in intelligence tests were used. A question with four different answers, one of which was correct, was shown the subject and he merely had to indicate his choice by pressing one of four keys. The question and answers appeared successively in a window. When he pressed the key, a new question turned up in the window, and, if the proper key had been pressed, a counter recorded the success.

By a simple adjustment of the apparatus, it was so readjusted that a new question appeared only when the first one was answered correctly while the counter recorded all attempts.

PLANT LIVES IN AIR; YET HAS HIGH IRON CONTENT

The long, gray festoons of Spanish moss, that form romantic draperies on the trees in the South, must get its food somewhere for all plants must. But since it has no roots and spends its whole life in the air, how does it get the necessary mineral salts? Drs. Edgar T. Wherry and Ruth Buchanan, of the Bureau of Plant Industry, U. S. Department of Agriculture, have been asking themselves this question, and repeated it before the Ecological Society of America.

"Analyses of its ash showed it to contain unusually large amounts of sodium, iron, silicon, sulphur, and chlorine," said Dr. Wherry. "A sample from near the seacoast proved to contain more chlorine than one from some miles inland, suggesting that the source of this element is spray from the ocean which the wind carries up to high levels, and is then brought down by the rain. The sodium and sulphur may reach the plant in the same way, but where the silicon and iron come from is a mystery."

A mixture of asbestos and Portland cement, compressed into sheets, forms a splendid insulating material.

Radio vacuum tubes are called "valves" in England, because they let electricity through in one direction and not in another.

CONTRASTS ARGUMENTS OF DARWIN AND BRYAN

Contrasting the manner and method of debate of the great proponent of evolution and its chief opponent, Prof. Edward L. Rice, of Ohio Wesleyan University, addressed the zoological section of the American Association for the Advancement of Science, of which hewas the presiding officer during the past year.

Prof. Rice summerized his address as follows:

"Mr. Bryan's attack upon evolution has, of course, no scientific significance but it is dangerous alike to freedom of investigation and teaching and to religion. This danger justifies the present address, the aim of which is to further emphasize the unscientific and illogical character of Bryan's argument by a comparison of hismethod with that of Darwin.

"Darwin's work is a perfect example of the inductive method, - hypothesis (Mr. Bryan's 'guess'), followed by the most careful verification, and leading to a degree of probability amounting to practical certainty, - all that the inductive method can ever attain. The known scientific facts upon which the evolution theory bases are ignored by Bryan or categorically denied.

"Bryan's main attack upon evolution is a deductive argument based upon the assumption of the literal accuracy of the Bible in general and of the first two chapters of Genesis in particular. This assumption is not Biblical; it has not been uniformly accepted in the early church, nor is it accepted by the leading Bible scholars of today.

"Darwin's method is characterized by an unbiased search for truth and the utmost frankness in the meeting of difficulties and objections. Mr. Bryan, on the other hand, ignores objections. Hismethod is that of the special pleader for a preconceived idea.

"Mr. Darwin takes the attitude of science in recognizing that most beliefs (scientific, religious, andpractical) are incapable of demonstrative proof; Mr. Bryan considers all of his own beliefs as of a certitude permitting no discussion.

"Darwin's work represents the study of a lifetime; Bryan's is a mere avocation of a man busy in other lines - the amateur versus the professional.

"Sarcasm and ridicule are as conspicuously present in Bryan's writings as they are absent from Darwin's.

"Happily, not all theologians follow the dogmatic method of Mr. Bryan; nor unhappily, is Mr. Darwin's scientific method characteristic of all his followers. It is to be hoped that the outcome of the present controversy may be the alliance of a more scientific religion and a more religious science."

LEADERS IN SCIENCE

We especially call to your attention the enclosed leaflet cataloging a complete photographic library comprising some 1200 pictures of men and women working in the sciences, as photographed by Julian P. Scott who has been in contact with scientists from all parts of the country. The photographs are of postcard size, approximately 3 1/8 x 5 3/8 inches, and retail for 20¢ each. You may also obtain suitable enlargements at $1.00 each. Turn to inside cover page of catalog for further information and order blank.